

VIII.3.3-API-HFD HARTFORD (NERFC) API-RUNOFF OPERATION

Identifier: API-HFD

Operation: 43

Developed By: Northeast River Forecast Center

Parameter Array: The FORTRAN identifier used for the parameter array is PO. The contents of the PO array are:

<u>Position</u>	<u>Type</u>	<u>Contents</u>
1	I*4	Operation version number
2-3	R*4	Runoff zone identifier
4-8	R*4	Runoff zone name
9	I*4	Runoff zone number
10	R*4	Latitude of runoff zone centroid (units of decimal degrees)
11	R*4	Longitude of runoff zone centroid (units of decimal degrees)
12	R*4	Runoff adjustment factor
13	R*4	24-hour API recession factor
14	R*4	Maximum limit for new storm rain/melt
15	R*4	Upper ATI limit (winter curve)
16	R*4	Bottom ATI limit (winter curve)
17	R*4	Upper ATI limit (summer curve)
18	R*4	Bottom ATI limit (summer curve)
19	R*4	Actual average annual basin temperature (units of DEGF)
20	R*4	Corrected average annual basin temperature (units of DEGF)
21-22	R*4	Unused
23	I*4	API/ATI/RI Geographical relationship number
24	I*4	Computational time step interval (units of HR)

<u>Position</u>	<u>Type</u>	<u>Contents</u>
25	I*4	Number of hours in the new storm window
26	I*4	Number of periods in the new storm window
27	I*4	Number of positions needed in the CO array
28	I*4	API/ATI/FI time series output flag
29	I*4	Initial carryover input flag
30-31	R*4	Unused
32	I*4	Location of mandatory time series information in the PO array (LMTS)
33	I*4	Location of weekly basin temperatures in the PO array (LWKT)
34	I*4	Location of optional output time series information in the PO array (LOTS)
35-36	R*4	Unused
LMTS - +1	R*4	Internal identifier of the rain/melt time series
+2	R*4	Data type code of the rain/melt time series
+3 - +4	R*4	Internal identifier of the runoff time series
+5	R*4	Data type code of the runoff time series
LWKT - +51	R*4	Weekly basin temperatures
LOTS - +1	R*4	Internal identifier of the API time series
+2	R*4	Data type code of the API time series
+3 - +4	R*4	Internal identifier of the ATI time series
+5	R*4	Data type code of the ATI time series
+6 - +7	R*4	Internal identifier of the RI time series
+8	R*4	Data type code of the RI time series

Carryover Array: The FORTRAN identifier used for the carryover array for this Operation is CO. The contents of the array are:

<u>Position</u>	<u>Type</u>	<u>Contents</u>
1	R*4	12Z API value (units of IN)
2	R*4	12Z ATI value (units of DEGF)
3	R*4	12Z RI value (units of IN)
4	R*4	Storm API value at 12Z (units of IN)
5	R*4	Storm ATI value at 12Z (units of DEGF)
6	R*4	Storm RI value at 12Z (units of IN)
7	R*4	Storm rain/melt (units of IN)
8	R*4	Storm runoff (units of IN)
9	R*4	24-hour rain/melt (units of IN)
10	R*4	24-hour runoff (units of IN)
11-34	R*4	Rain/melt for each period in the new storm window (units of IN)

Subroutines Names and Functions: Subroutines associated with this Operation are:

<u>Subroutine</u>	<u>Function</u>
PIN43	Input cards and stores values in PO and CO arrays
PRP43	Print information stored in the PO array
PRC43	Print information stored in the CO array
EX43	Execute the API-HFD operation
AI43	Contains the equations for computing the AI for the event-based NERFC API rainfall-runoff model
AINS43	Contains the ATI summer curves for the New England, eastern New York areas used in the event-based NERFC API rainfall-runoff model
AIBS43	Contains the ATI summer curves for the Buffalo area used in the event-based NERFC API rainfall-runoff model
AIRS43	Contains the ATI summer curves for the Genessee area used in the event-based NERFC API rainfall-runoff model
AINW43	Contains the ATI winter curves for the New England, eastern New York areas used in the event-based NERFC

Subroutine    Function

	API rainfall-runoff model
AIBW43	Contains the ATI winter curves for the Buffalo area used in the event-based NERFC API rainfall-runoff model
AIRW43	Contains the ATI winter curves for the Genessee areas used in the event-based NERFC API rainfall-runoff model
RO43	Contains the equations for computing the RO for the event-based NERFC API rainfall-runoff model
RON43	Contains the precipitation curves for the New England, eastern New York areas used in the event-based NERFC API rainfall-runoff model
ROB43	Contains the precipitation curves for the Buffalo areas used in the event-based NERFC API rainfall-runoff model
ROR43	Contains the precipitation curves for the Genessee areas used in the event-based NERFC API rainfall-runoff model
COX43	Perform carryover transfer
PUC43	Punch cards with information from the PO and CO arrays which may be used by the PIN routine
TAB43	Make entry into Operations Table

Subroutines PIN43, PRP43, PRC43, COX43 and PUC43 have standard argument lists for these routines as described in Section VIII.4.3.

SUBROUTINE EX43 (PO,CO,PX,RO,APIS,ATIS,RIS)

Function: This is the execution routine for Operation API-HFD.

Argument List:

<u>Variable</u>	<u>Input/ Output</u>	<u>Type</u>	<u>Dimension</u>	<u>Description</u>
PO	Input	R*4	Variable	Contains parameters and other information
CO	Both	R*4	Variable	Contains carryover data
PX	Input	R*4	Variable	Rain/melt time series data (units of MM)
RO	Output	R*4	Variable	Runoff time series data (units of MM)
APIS	Output	R*4	Variable	Storm API time series data (units of MM)
ATIS	Output	R*4	Variable	Storm ATI time series data (units of DEGC)
RIS	Output	R*4	Variable	Storm RI time series data (units of MM)